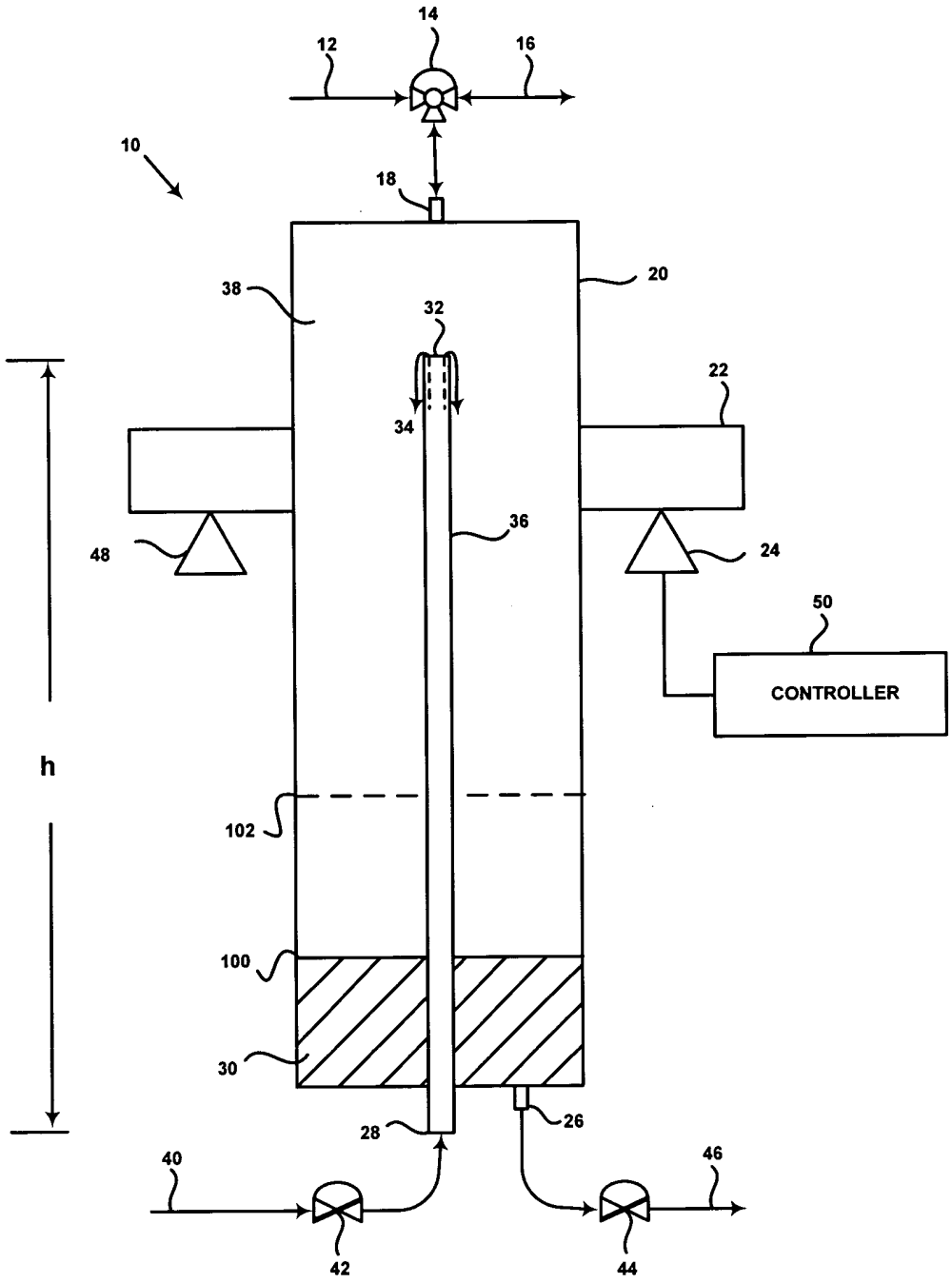
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48
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50
CONTROLLER
h
102
100
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42
44

FIGURE 1

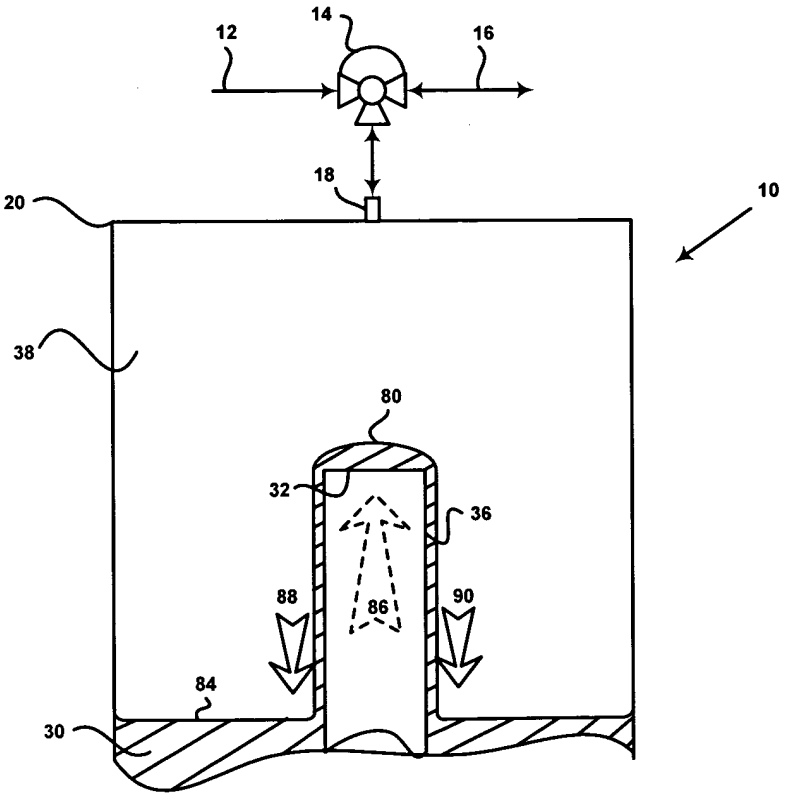


FIGURE 2

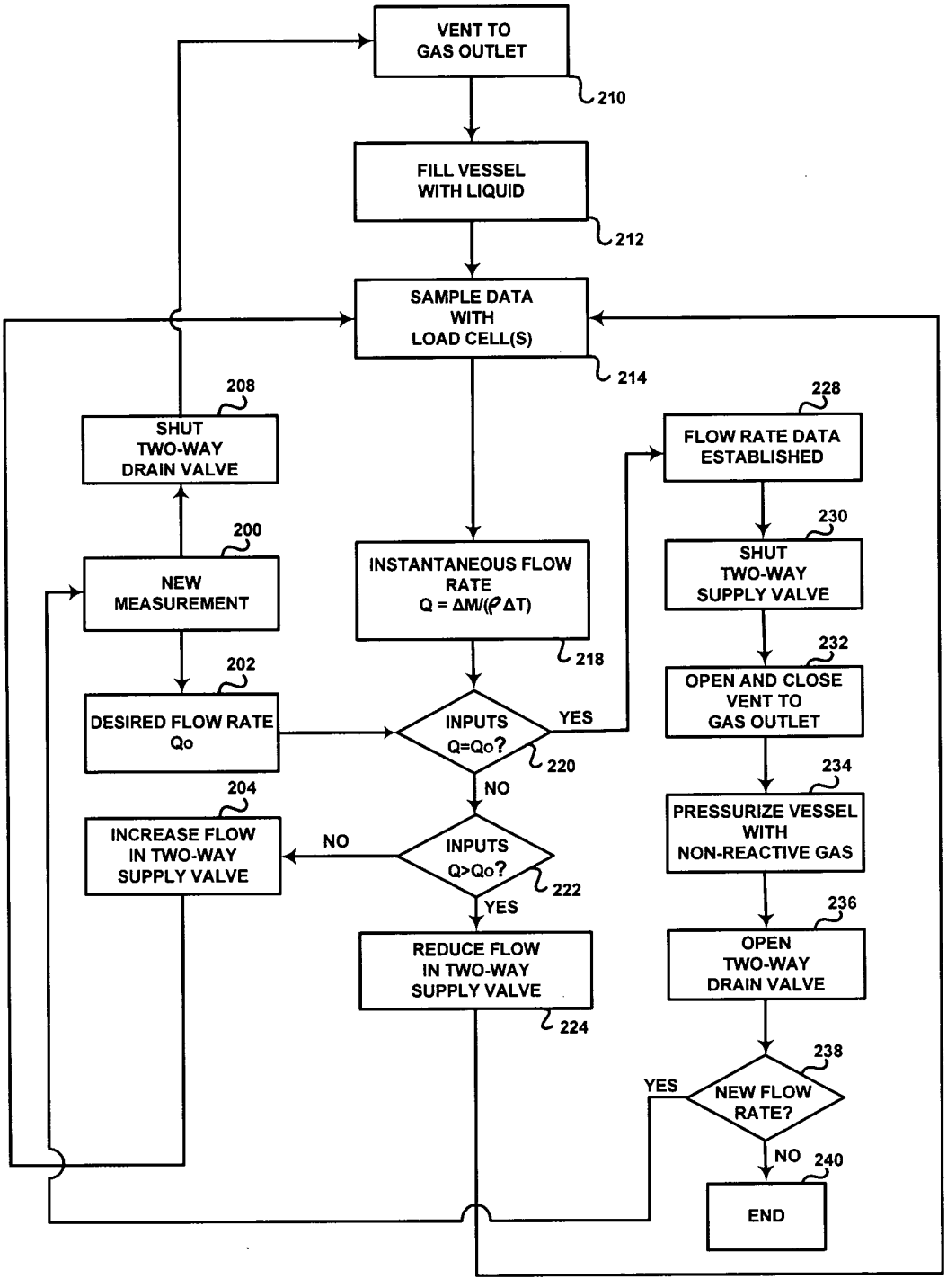

VENT TO GAS OUTLET
210
FILL VESSEL WITH LIQUID
212
SAMPLE DATA WITH LOAD CELL(S)
214
208
SHUT TWO-WAY DRAIN VALVE
200
NEW MEASUREMENT
202
DESIRED FLOW RATE Qo
204
INCREASE FLOW IN TWO-WAY SUPPLY VALVE
INSTANTANEOUS FLOW RATE Q = ΔM/(ρ ΔT)
218
INPUTS Q=Qo?
220
YES
NO
INPUTS Q>Qo?
222
NO
YES
REDUCE FLOW IN TWO-WAY SUPPLY VALVE
224
228
FLOW RATE DATA ESTABLISHED
230
SHUT TWO-WAY SUPPLY VALVE
232
OPEN AND CLOSE VENT TO GAS OUTLET
234
PRESSURIZE VESSEL WITH NON-REACTIVE GAS
236
OPEN TWO-WAY DRAIN VALVE
238
NEW FLOW RATE?
YES
NO
240
END

FIGURE 3

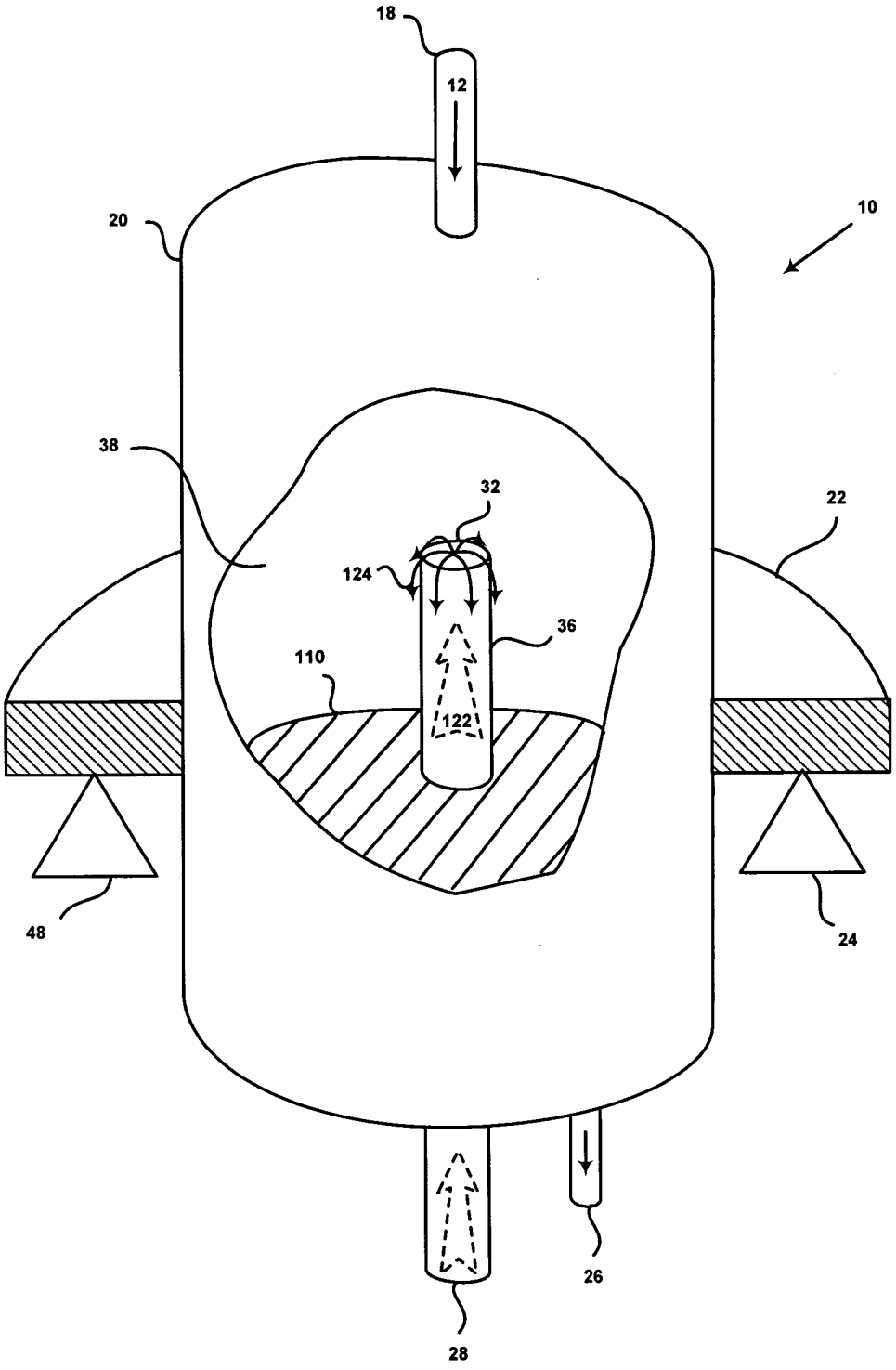
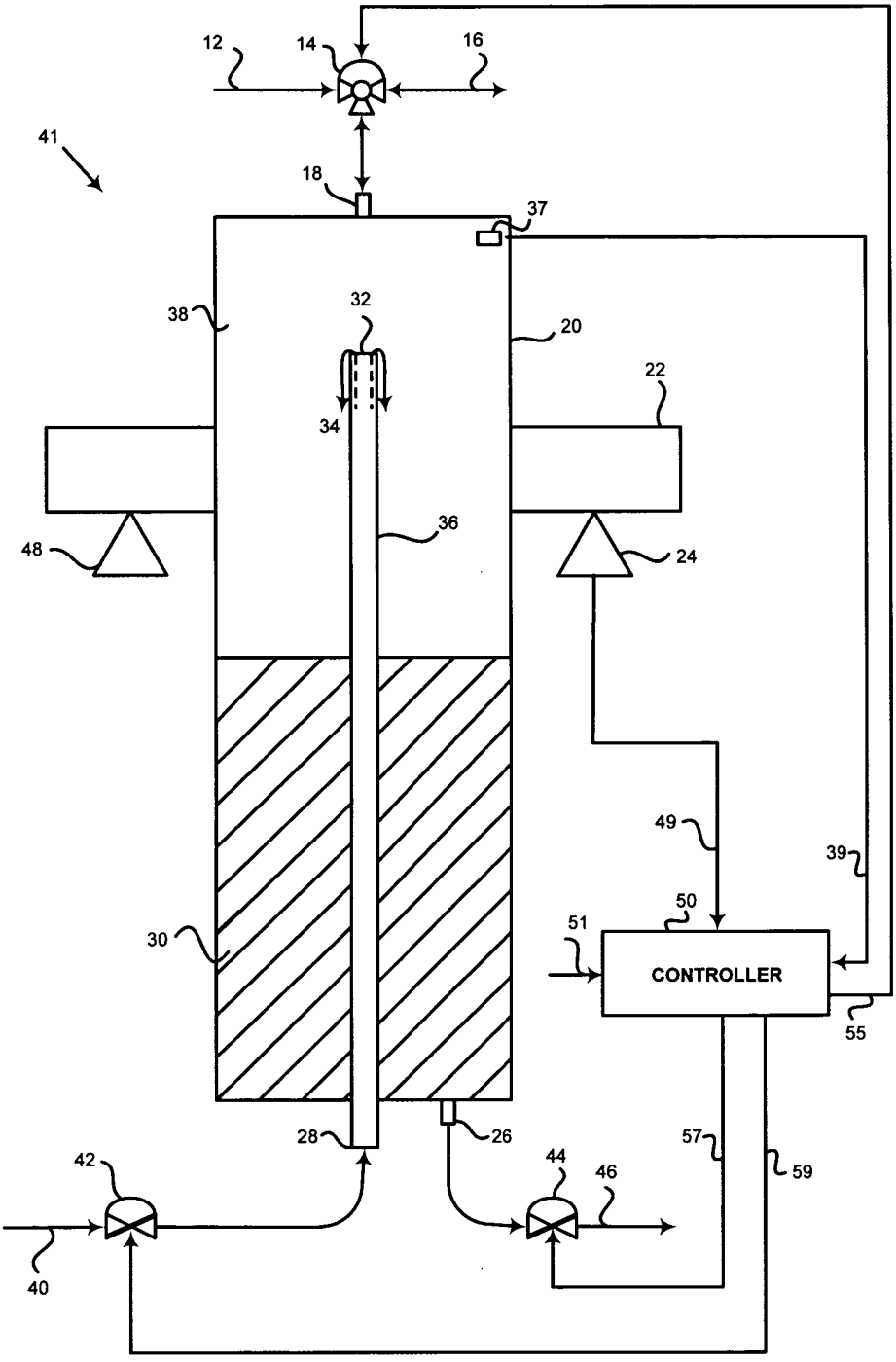


FIGURE 4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CONTROLLER
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FIGURE 5

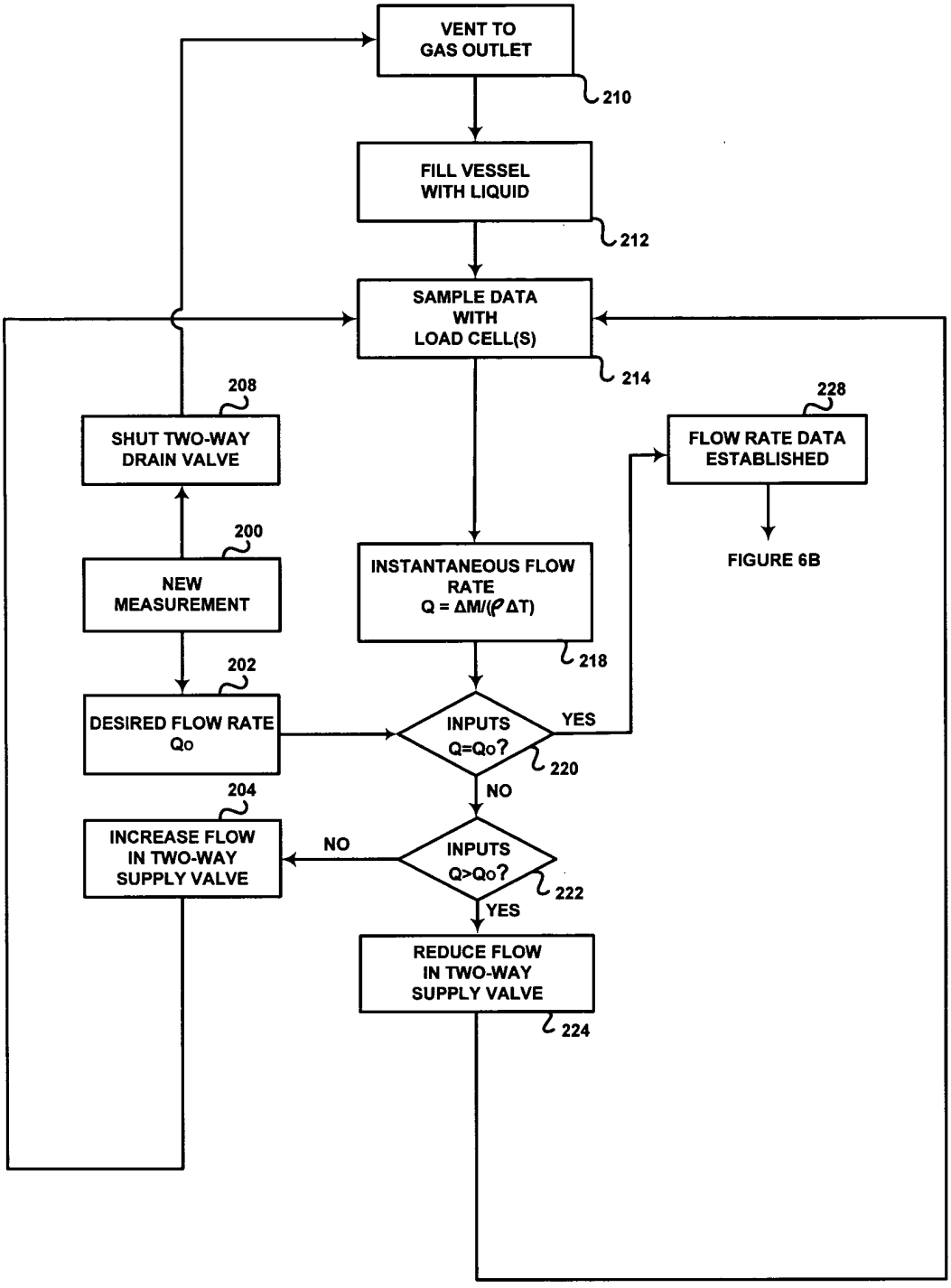
VENT TO GAS OUTLET
210
FILL VESSEL WITH LIQUID
212
SAMPLE DATA WITH LOAD CELL(S)
214
208
SHUT TWO-WAY DRAIN VALVE
200
NEW MEASUREMENT
202
DESIRED FLOW RATE Qo
204
INCREASE FLOW IN TWO-WAY SUPPLY VALVE
INSTANTANEOUS FLOW RATE Q = ΔM/(ρΔT)
218
INPUTS Q=Qo?
220
YES
NO
INPUTS Q>Qo?
222
NO
YES
REDUCE FLOW IN TWO-WAY SUPPLY VALVE
224
228
FLOW RATE DATA ESTABLISHED
FIGURE 6B

FIGURE 6A

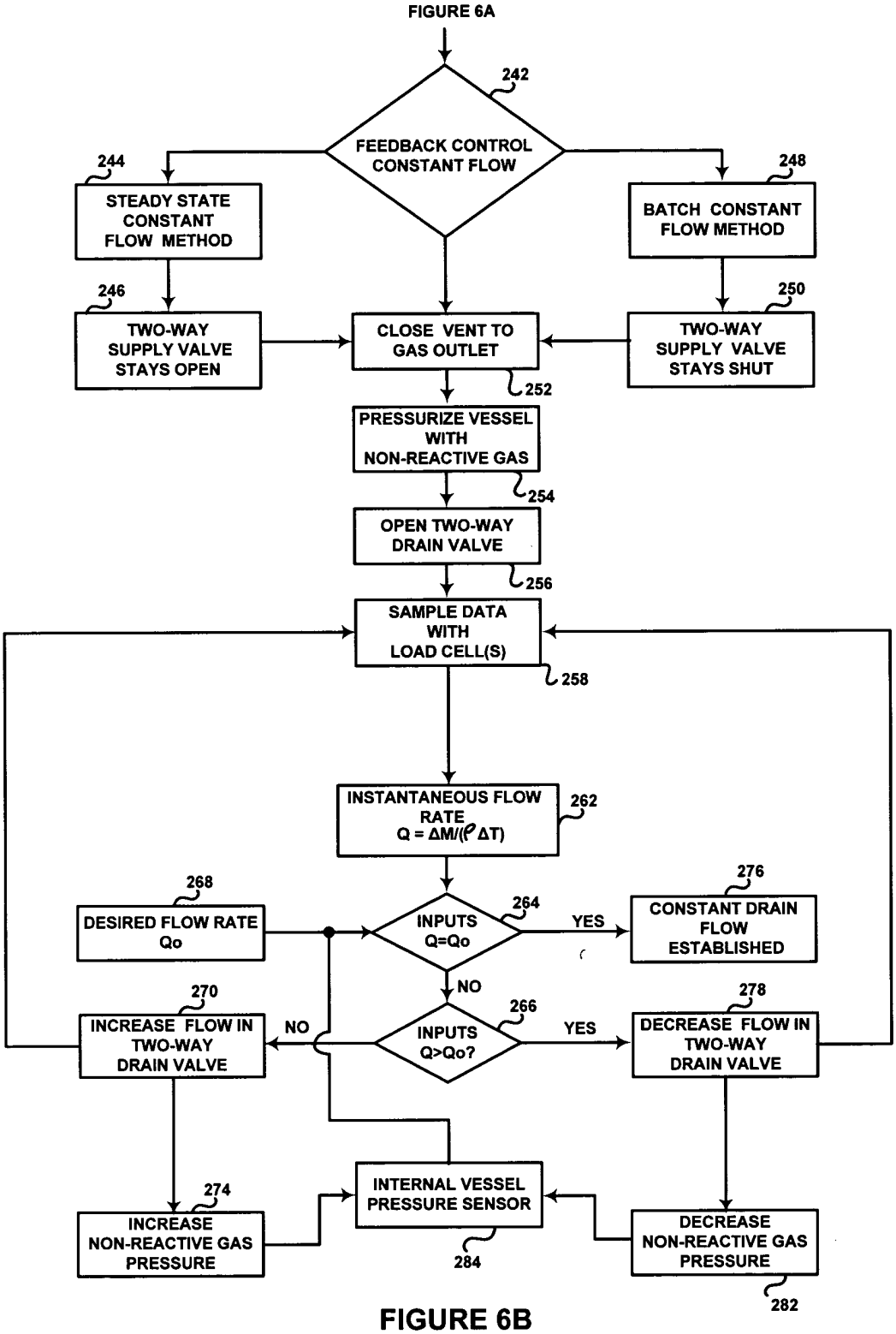
FIGURE 6A
242
FEEDBACK CONTROL CONSTANT FLOW
244
STEADY STATE CONSTANT FLOW METHOD
248
BATCH CONSTANT FLOW METHOD
246
TWO-WAY SUPPLY VALVE STAYS OPEN
CLOSE VENT TO GAS OUTLET
250
TWO-WAY SUPPLY VALVE STAYS SHUT
252
PRESSURIZE VESSEL WITH NON-REACTIVE GAS
254
OPEN TWO-WAY DRAIN VALVE
256
SAMPLE DATA WITH LOAD CELL(S)
258
INSTANTANEOUS FLOW RATE Q = ΔM/(ρ ΔT)
262
268
DESIRED FLOW RATE Qo
INPUTS Q=Qo
264
YES
276
CONSTANT DRAIN FLOW ESTABLISHED
NO
270
INCREASE FLOW IN TWO-WAY DRAIN VALVE
NO
INPUTS Q>Qo?
266
YES
278
DECREASE FLOW IN TWO-WAY DRAIN VALVE
274
INCREASE NON-REACTIVE GAS PRESSURE
INTERNAL VESSEL PRESSURE SENSOR
284
DECREASE NON-REACTIVE GAS PRESSURE
282

FIGURE 6B